



Martin Brogie, Inc.
ENVIRONMENTAL SERVICES

- Environmental Site Investigations
- Building Contaminant Surveys
- Wetlands Consulting
- Remediation Contract Management

**Response to Staff Comments
for
Proposed Wetland Restoration Plan
25 Kane Street
West Hartford, Connecticut**



1970 Aerial Photo

SUBMITTED TO:

**Thomas R. Evans
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06498
April 23, 2020**

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1. Introduction

1.1 Purpose

Martin Brogie, Inc. (MBI) is pleased to submit the following information regarding the nature and functions of the Connecticut Regulated Wetlands on land located at 25 Kane Street in West Hartford, Connecticut (Property). Land within and adjacent to the wetlands was recently cleared in association with tree and debris removal on the Property and the adjacent Connecticut Department of Transportation (ConnDOT) right of way. This report also presents the components and implementation of a proposed wetland enhancement plan for the wetlands and adjacent, undeveloped upland areas.

This report also presents Town Staff comments regarding our February 21, 2020 restoration plan permit submittal and provides comment responses and additional information and documentation.

A Site location map is provided as Figure 1. A 4 sheet plan set including a project erosion and sedimentation control plan and a restoration plan, along with detail sheets are provided separately.

1.2 Wetland Permit Background

MBI prepared an initial wetland restoration plan in January of 2020 that focused on the flood storage and floodway functions of Kane Brook and the on-site and adjacent stormwater tributaries to the brook. This plan considered the original design of the re-routed brook and its tributaries that was the result of the adjacent highway construction including the adjacent west-bound off-ramp and the elevation of Prospect Avenue (15-20 feet above grade) to accommodate an overpass. The plan included several native trees along the south side of the brook for shade and sought to remove stumps and plant native grasses and forbs along the brook and in disturbed upland areas to maintain an open site with uninhibited flow paths.

Feedback provided by Town Staff during a February 12, 2020 project review meeting included a request to provide additional restoration planting.

A revised plan, submitted on February 21, 2020 called for the installation of 22 native trees and 68 native shrubs. Town staff provided comments on the revised plan on April 1, 2020, and a revised plan set was prepared, as requested by Town Staff and is being submitted with this revised narrative report.

Town Staff comments and the applicant's responses are provided below.

1.3 Staff Comments

1. The Title of the Plan should read Wetland Regulated Activity. **Agree and added.**
2. All existing tree stumps that are proposed to be removed should be identified on the plan. **We are no longer planning to remove stumps. Stumps will be cut flush with existing grade.**
3. Please consider a different wetland boundary symbol to enhance visual clarity. **Agree and Completed.**

4. Please provide a detail of the temporary stream crossing. The attached PDF (DOC475) provides an example of a previously approved stream crossing. **Agree and Completed.**
5. Please list the 'sequence of construction' on the plan sheet. If needed, this might necessitate the plan span more than one plan sheet. (see attached example DOC475). **Agree and provided.**
6. Please list the existing topographic contours and any proposed modification to the disturbed area on the plan. **Existing contours were previously provided. These include surveyed contours around the brook and contours imported from the Town GIS system as recommended by the Town Planner at our meeting on 2/12/20. No change in site contours is proposed.**
7. Please provide a planting table that lists the quantity, size and species type for all of the proposed plantings. A separate planting schedule and detail should also be provided. **Agree and provided.**
8. Due to the size and quantity of the vegetation removed on site, staff strongly suggested a more robust and well thought out planting plan. Increase in caliper and gallon sizes and quantities should be considered for the site. **The site was completely unmanaged and overgrown including significant quantities of invasive vines that were compromising tree health. The proposed tree planting plan includes 22 native floodplain species including species that were previously present, as well as upland habitat trees. The tree spacing will allow for healthy tree growth and longer life spans. The extensive 68 shrub planting plan includes 6 species that have high wildlife value and are placed along topographic breaks consistent with their wet tolerances. It also includes two species found on the site. The sizes selected were locally available. A planting summary table provided in Section 5.2 of this report speaks to the thoughtfulness of the proposed planting. The revised planting plan, prepared by a landscape architect, provides a better scaled representation of the plan. The plan provides significant wetland and upland enhancement and considers the wetlands primary function as a stormwater floodway.**
9. The plan lacks sufficient erosion and sedimentation (E&S) control details. A separate plan sheet should be provided that details an E&S plan consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, guidelines (2002 CT E&S Guidelines). The attached approved plan (PDF attached Doc475) is provide as an example . **A full E&S plan has been provided.**
10. An alternate method of stabilization should be considered along the Prospect Avenue given the steep grading of the area. This area appears to exceed slope stabilization materials requirement in the 2002 CT E&S Guidelines. **This side slope was constructed by DOT as part of highway overpass construction. It consists of fine to coarse silty sand and gravel with some, intermixed rip-rap cobbles. The applicant did not remove root masses and only one tree was cut on the slope. There is no evidence of erosion on the slope and new vegetation is emerging. The Engineers E&S plan calls for raking and seeding the slope with a wildlife grass mix.**
11. Attached is an additional stream enhancement plan previously approved by the Agency. Please see PDF DOC476. **Please see revised planting plan and details provided by a Landscape Architect.**
12. The application failed to address the following Application Requirements of Section 7 of the IWW Regulations. This additional information must be provided:

- i. **7.f.** A narrative description of all development activities contemplated by the Applicant at the site which is the subject of the application for the five (5) year period commencing on the date when the application is filed, if any. ***There are no current development prospects for the site. The Applicant previously entertained two national coffee enterprises. The closing of the adjacent large grocery store and the COVID-19 crisis have eliminated current interest in the site.***
 - ii. **7g.** Alternatives which would cause less or no environmental impact to Wetlands or Watercourses and why the proposal to alter wetlands set forth in the application was chosen; these alternatives shall be diagrammed on a site plan or drawing and submitted to the Agency as part of the application. ***The wetlands were altered already by the removal of the vegetation. In working with Town Staff, a previous floodway-oriented plan was submitted and is considered an alternative that meets this criteria. This alternative plan should be in the Town's file and should be included in the permit record.***
 - iii. **7h.** A site plan drawn by a licensed surveyor or engineer registered in the State of Connecticut showing the proposed activity and existing and proposed conditions in relation to Wetlands and Watercourses and identifying any further activities associated with, or reasonably related to the proposed Regulated Activity which are made inevitable by the proposed Regulated Activity and which may have an impact on Wetlands or Watercourses; ***The plan previously submitted was stamped by a Surveyor. The revised plan set meets this criteria as well.***
13. The West Hartford Engineering Division Staff Engineer reviewed the previously proposed plans and visited the site. The Town Engineer provided one comment which suggested the removal of debris from the east end of the brook, just upstream of the Prospect Avenue culvert. ***Agreed and added.***

1.4 Project Background

Martin Brogie, Inc. (MBI) was engaged to conduct this assessment, plan and report by Thomas R. Evans of Westbrook, Connecticut, the Property owner. Mr. Evans contracted the removal of trees and invasive vines and shrubs from the southern portion of the Property and, within the ConnDOT right-of-way along the west side of the Property (with permission from ConnDOT). Vegetation in these areas had not been managed in some time resulting in damage to the fences, accumulation of litter and solid waste, and the presence of inhabited encampments. Mr. Evans sought to “clean-up” the area, re-install fences, eliminate the encampments, and establish more presentable, managed, native vegetation. The logging contractor approached the project as a harvest using conventional and accepted practices of working near and crossing watercourses. However, the clear-cutting nature of the work garnered the attention of the West Hartford Town Planner/Designated Wetlands Agent who issued a Notice of Inland Wetlands & Watercourses Violation (September 4, 2019) and required cessation of work and the installation of erosion control measures along Kane Brook which crosses the Property from west to east. Subsequently, the Connecticut Inland Wetlands on the Property were delineated, and a series of erosion control silt fences were installed along the brook. The silt fence and wetland flags were located in the field by the Licensed Surveyor. The survey plan was utilized as the base for the Wetlands Enhancement Plan.

The following plan describes the proposed restoration project implementation as well as the effects of the project on the functions and values of the wetland system.

MBI conducted the wetland delineation for the Property on September 5, 2019 and conducted additional field research on October 11 and November 3, 2019, February 17, 2020 and April 20, 2020. Martin Brogie, Certified Soil Scientist with MBI conducted the delineation and assessment.

2. Site and Vicinity Characteristics

2.1 General Site Description and Location

The Property is approximately 2.67-acres in size and is generally L-shaped. The northeast, approximate 1/3 of the Property along Kane Street is developed and occupied by a vacant, 2,900+/- square foot (s.f.) fast food/restaurant building most recently occupied by a *D'ANGELO Grilled Sandwiches* restaurant. A paved entrance drive extends off of the south side of Kane Street northeast of the building. Paved parking, driveway and drive-through areas are located on all sides of the building. A grassed lawn area is located east of the building, along the eastern property boundary. A dumpster pad is located in the southwest portion of the paved area.

Kane Brook crosses the central portion of the property flowing from West to East approximately 60 to 70 feet south of the rear paved parking area. The brook enters the Property via a box culvert located beneath an I-84 highway offramp and exits the Property via a box culvert beneath Prospect Avenue. The land south of the brook includes a steeply sloping fill embankment along Prospect Avenue which abuts the southern portion of the Property to the east. An undulating hill slope occupies the southern and southwest portion of the Property along the I-84 right of way. A flat, triangular area is located south of the brook and in between the steep embankment and hillslope. A sanitary sewer line crosses the Property from west to east, just south of the brook.

The Property is located in a commercial area nearby to the west of the Hartford City boundary. A gasoline station and convenience store border the site to the east and north. A car washing and detailing business operates on this adjacent property as well. An I-84 off ramp abuts the Property to the west, followed by an on-ramp and then a gasoline station. I-84 borders the Property to the south and a large commercial plaza is located across Kane Street to the north.

2.1.1 Abutters

The Property has two abutters including the gasoline station and convenience store to the north and east (195 Prospect Avenue) the State of Connecticut Highway to the south and west. Kane Street abuts the Property to the north and Prospect Avenue abuts the property to the southeast.

195 Prospect Avenue - CPD PROPERTIES-195 PROSPECT STREET LLC

The project is located within 500 feet of the City of Hartford municipal boundary.

A Site Location Map is provided as Figure 1. Photographs are provided in Attachment A.

2.2 Soil

The Natural Resource Conservation Service WEB Soil Survey indicates that the Property soils consist of Udorthents which are man-made/filled areas. Site topography suggests the presence of fill materials along the highway right-of way, along Prospect Street and along the northern, developed portion of the Property. Sandy soils were noted in these locations. Aerial photographs from 1951 and 1970 (see below) indicate that the Property was part of a forested area within a highly developed area and likely contained wetlands/watercourses. The construction of the highway resulted in the reconfiguration of the land and watercourses including importation of fill materials and creation of ditches, channels and the current course of Kane Brook through the Property as depicted in the 1970 aerial photograph.

Native soils were encountered along the brook and in the central, triangular area south of the brook. These soils consist of dense, red-brown, varved silt, clay and very fine sand often referred to as the Hartford Clays. Soil along the brook contained grey (low chroma) varves and were considered to be “poorly drained” Connecticut Regulated Wetland Soils.



1951 Aerial Photograph (UConn Magic)



1970 Aerial Photograph (UConn Magic).

2.3 Hydrology

The primary hydrologic feature on the Property is Kane Brook which flows from west to east across the central portion of the Property. The brook enters the property via a 13 by 7-foot box culvert located beneath the I-84 off-ramp. The brook exits the Property via an 11 by 13-foot box culvert located below Prospect Avenue. A 60-inch reinforced concrete pipe (RCP) discharges stormwater to the north side of the brook after passing below the developed portion of the Property. This stormwater outfall delivers storm drainage from along Kane Street and the commercial development to the north, according to West Hartford Engineering Maps. An 18-inch RCP stormwater discharge location is positioned adjacent to the east of the 60-inch RCP and likely receives the discharges from two catch basins located in the developed portion of the Property.

A vegetated ditch is located along the east side of the highway off ramp west of the site and within the highway right of way. The ditch receives stormwater from a reinforced concrete pipe located near the north end of the off ramp and discharges to Kane brook just west of the western property boundary.

Kane Brook appears to maintain some perennial base flow although year-round observations were not completed as part of this study. Before entering the Property, the brook is culverted below I-84 to the southwest and is an open channel for approximately 1400 feet before being culverted below Oakwood Avenue. The brook daylights again to the northwest of the Oakwood Avenue culvert at the rear of residences north of Edgemere Avenue. After exiting the Property, the brook flows eastward through a wooded area, passes below New Park Avenue, I-84 and the busway before entering a forested area and then the I-91 corridor. It discharges to the East Branch of the Park River approximately 2700 feet east of the Property (See GOOGLE aerial image below).



Given the urban setting and the presence of stormwater outfalls into the brook from expansive paved areas, the brook reacts quickly to storm events and can pass from a minimal base flow to flood stage in short periods of time.

2.4 Vegetation

A stand of Japanese Knotweed (*Fallopia japonica*) is located along the north side of the brook, in the area of the 60-inch stormwater outfall. Numerous cut stumps are present along the brook and include American Elm (*Ulmus Americana*), Red Maple (*Acer rubrum*), Eastern Cottonwood (*Populus deltoides*),

and Weeping Willow (*Salix sepulcralis*). Evidence of Grape vine (*Vitus spp.*), Oriental Bittersweet vine (*Celastrus orbiculatus*) and Multiflora Rose (*Rosa multiflora*) was observed over much of the Property.

2.4 Wetland Delineation

On September 5, 2019, Martin Brogie, Soil Scientist registered with the Society of Soil Scientists of Southern New England delineated Connecticut Regulated Wetlands on the Property and a portion of the adjacent ConnDOT land to the west in accordance with the definitions provided in Connecticut General Statutes Section 22a-38 definitions (15) and (16). These include soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the National Cooperative Soils Survey; and, rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent. In addition, intermittent watercourses, defined as having a permanent channel and bank and the occurrence of two or more of the following characteristics: evidence of scour or deposits of recent alluvium or detritus; the presence of standing or flowing water for a duration longer than a storm incident; and/or the presence of hydrophytic vegetation.

Using a hand auger, soil was explored to a depth of 30 inches at several locations on the Property. Soil identified as poorly drained was observed along the north side of the brook. In addition, evidence of flood flow including scour and deposition were noted along the stream, above the base flow channel. The wetland line was placed at the apparent average seasonal high-water mark and captured all of the poorly drained soil, interior of the wetland line. The delineation line followed the man-made outlet and inlet structures/wing walls associated with the 60-inch RCP outfall and the two box culverts.

The wetland lines were surveyed and are depicted on the attached Figure 2.

3. Wildlife Habitat and Utilization

The delineated wetland area provides little specific wildlife value due to its level of disturbance, lack of diversity, and lack of connectivity with other wildlife corridors and islands. However, due to the presence of base flow, Kane Brook does provide some fish habitat. Approximately 12 minnows were observed in an 18" pocket of water in the east end of the onsite reach.

No amphibians or mammals were observed on the Property. Due to the recent site clearing activity, wildlife users of the Property would likely have diminished. It is likely that mammals such as Skunk, Raccoon, Possum, and Grey Squirrel and other urban wildlife utilize the site. Raccoon tracks were observed in the streambed.

The Connecticut Department of Energy and Environmental Protection (CTDEEP) Natural Diversity Database (June 2019) does not depict any State or Federal Listed Species or Significant Natural Communities on or adjacent to the Property.

4. Wetland Functions/Values and Impacts

4.1 Functions and Values

A qualitative review of the functions and values of the on-site wetlands was performed to assist in determining wetland impacts resulting from the project. Wetland functions consistent with U.S. Army Corps of Engineers methodology were assessed and are summarized below.

Groundwater Recharge/Discharge – This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. Recharge should relate to the potential for the wetland to contribute water to an aquifer. Discharge should relate to the potential for the wetland to serve as an area where groundwater can be discharged to the surface. Due to the dense soil below and along the brook, low volume base flow, and the flat gradient, the wetland may provide some limited groundwater recharge/discharge functions.

Floodflow Alteration - (Storage & Desynchronization) - This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events. The wetlands onsite consist of a relatively narrow channel which provides through-flow of stormwater without any significant storage after storms. It is considered a “flashy” system where stormwater appears and recedes quickly after storm events. However, the brook provides flood flow storage capacity during storm events including an area of previously created compensatory storage on the south side of the brook.

Sedimentation/Shoreline Stabilization – This function relates to the effectiveness of a wetland to stabilize streambanks and shorelines against erosion. Vegetation along the streambank provides some stabilization against erosion although the soil type along the reach is not highly erosive.

Sediment/Toxicant Retention and Nutrient Removal/Retention/Transformation – This function relates to the effectiveness of the wetland to remove stormwater pollutants and provide some renovation of water quality. The site consists of an urban wetland with low base flow that receives stormwater input and releases stormwater rapidly to the east. Given the narrow, swiftly moving channel with little associated bordering wetlands, and the presence of road sand and debris in the stream channel, the wetland offers little in terms of stormwater renovation. The stream bed does trap road sand from run-off and the compensatory storage area does serve as a “quiet water” area where sediments can be removed.

Production Export – This function relates to the effectiveness of the wetland to produce food or usable products for humans or other living organisms. The delineated onsite wetland area does not provide this function.

Fish and Shellfish Habitat – This function considers the effectiveness of seasonal or permanent waterbodies associated with the wetland in question for fish and shellfish habitat. The delineated wetland area does provide some habitat for fish given its apparent, perennial base flow and interconnectivity with other surface waterbodies as well as the presence of observed fish.

Wildlife Habitat - This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both

resident and/ or migrating species are considered. The delineated site wetland is a disturbed urban area offering no significant wildlife habitat. Some fish populations utilize the brook. **Endangered Species Habitat** – The Connecticut Department of Energy and Environmental Protection (CTDEEP) Natural Diversity Database (June 2019) does not depict any State or Federal Listed Species or Significant Natural Communities on or adjacent to the Property.

Visual Quality/Aesthetics – The delineated wetland area consisted of a man-made channel in an intensely urbanized area. Road sand and debris are located along and in the brook channel and invasive species are present. With proper management and thoughtful restoration, the wetlands and adjacent land could offer significant aesthetic qualities.

Educational/Scientific Value, Recreation, and Uniqueness Heritage – The wetland currently offers none of these values.

Overall, the delineated onsite wetland provides few functions and values given its disturbed nature and presence in a highly urbanized area. Its' primary function is that it offers flood storage capacity in an area with highly urbanized area. This reach of Kane Brook has significant restoration potential that could: accentuate flood storage and stormwater renovation functions; increase viability as fish habitat and provide aesthetic qualities.

4.2 Wetland Impacts

Areas within and adjacent to the delineated wetlands were clear cut including the removal of trees, shrubs and vines. A pile of logs and a large brush pile remain in the southern/upland portion of the site. Wood chips are stockpiled within the delineated wetland area, on the south side of the brook. Wood chips are located across the site as well as torn stumps and brush. Silt fence has been installed on the Property along the brook and covers the disturbed extent of the brook. Although excavator and track-mounted grinder (logging equipment) operated along the brook, no evidence of soil erosion into the brook from the activity was observed. The topsoil and associated herbaceous vegetation appeared to be intact and viable. All woody vegetation along the onsite 300-foot southern side of the brook and approximately 220 feet of the north bank (onsite) of the brook had been cleared of woody vegetation with stumps remaining in place. No evidence of in-stream disturbances was noted.

The remaining project calls for the removal of the logs and grinding of the remaining brush pile. Wood chips will be removed from the remainder of the site and placed, over landscaping fabric, along the western side of the Property (steeply sloping fill along Prospect Street as shown on Figure 2). This phase of the project will require a temporary stream crossing consisting of logs first laid parallel to the stream to avoid flow blockage and then crossed perpendicularly with a second tier of logs. The crossing would be removed after the equipment entered the southern side of the site and reinstalled to retrieve the equipment after 2 to 3 days of completing the work described above.

After the woody debris is removed/relocated, and all remaining stumps will be cut flush and observed invasive species will be removed by hand (see below for details). The site will then be raked to prepare the soil for planting.

The proposed woody vegetation installations and seeding with a wide variety of herbaceous plants will significantly enhance the wetlands and adjacent uplands. Landscape monitoring and invasives species removal, along with regular maintenance will ensure the planting scheme objectives are met.

The physical wetland impacts of the woody vegetation removal were significant. The project resulted in the nearly complete removal of shade over Kane Brook which is an important wetland function serving to cool surface water that receives significant discharges from large, nearby paved surfaces. The removal of food sources and cover for wildlife users of the site would have caused the relocation of wildlife including birds, mammals and insects. Some wildlife may have moved to the forested wetland along Kane Brook, just downstream, west of the Prospect Street culvert.

Although the impact to the onsite wetlands is considered significant, there is information including Google Street views, existing physical evidence, and photographs that indicate that the area had not been maintained for many years. It contained extensive invasive vines, was thickly overgrown along the streambed and contained several trash-filled homeless encampments. The streambank soil is stable and has not been subject to erosion or deposition except for primarily off-site source road sand. The flood flow capacity of the brook, as a stormwater conveyance, was impeded by debris and heavy woody vegetation. The result of clearing, re-planting and maintenance will increase and enhance the streams flood capacity in the future. This function is a primary wetland function of the onsite reach of Kane Brook.

5. Enhancement Plan

5.1 Introduction

The wetland enhancement plan has been developed to serve as a long term, maintained solution to address the previous overgrown conditions, lack of robust wildlife habitat food and shelter sources, and flood control impediments. The proposed plan is depicted on the attached Sheets C-2.1 and 2.2 and is focused on wetland restoration along the brook and includes upland enhancement in the southern portion of the site. The plan calls for the installation of 68 shrubs including 58 *wetland* (FAC and FACW) shrubs, 10 upland shrubs, 3 floodplain/wetland tree species (total of 14 trees) and 2 upland tree species (total of 8 trees). Various Wetland Conservation/Wildlife seed mixes are proposed for 3 different habitats. A plan for invasive species removal, vegetation monitoring and maintenance are also incorporated into the plan.

5.2 Site Preparation

The remaining project calls for the removal of the logs and grinding of the remaining brush pile. Stumps will also be cut flush. This phase of the project will require a temporary stream crossing.

After the woody debris is removed/relocated, all remaining stumps will be cut flush, and observed invasive species will be removed by hand (see below for details). The site will then be raked to prepare the soil for planting.

5.2 Proposed Planting Plan

Wetland and upland shrub and tree species were selected based on several parameters including, existing site species, native plants, wildlife value and flood resiliency. Three seed mixes were selected to include wetland restoration, forested habitat, and an open field/lightly forested upland wildflower habitat. Six wetland shrub species were selected including 3 FACW shrub species that are proposed in the lower wetland elevations and 3 FAC species proposed for slightly higher wetland elevations. The 14 wetland/flood plain tree species are proposed along the brook to provide shade in addition to the three large existing trees on the south side of the brook including a Cottonwood and two Willows. Upland Trees including Black Oak and Norway Spruce are proposed in the southern flat triangle of the site and the sandy hillslope along the highway right of way, respectively. Ten upland shrubs are also proposed in the flat triangle.

The specific woody vegetation proposed for the project are summarized in the table below.

Proposed Wetland and Upland Plant Inventory 25 Kane Street – Hartford, Connecticut			
<i>Species</i>	<i>Proposed Installations</i>	<i>Wetland Indicator Status</i>	<i>Attributes</i>
<i>Shrubs</i>			
Black Elderberry <i>Sambucus nigra</i>	11	FACW	Currently present in wetland. Some wildlife cover and food value
Highbush Blueberry <i>Vaccinium corymbosum</i>	9	FACW	High value for wildlife food source
Silky Dogwood <i>Cornus Omomom</i>	9	FACWused with willows for streambank protection. Other beneficial uses are for fish and wildlife habitat improvement, slope stabilization, borders, and as an ornamental.*
Serviceberry <i>Amelanchier canadensis</i>	8	FAC	Blooms early: important role as a food source for pollinators like bees and butterflies. High wildlife food value due to attractive fruit.
Grey Dogwood <i>Cornus racemosa</i>	13	FAC	Useful as a low-growing wild hedge which provides summer food and some cover for small animals and birds.
Nannyberry <i>Viburnum lentago</i>	8	FAC	Shade tolerant Produces good seasonal displays of flowers, fruits, and fall leaf color. Good wildlife food value.
Mapleleaf Viburnum <i>Viburnum lentago</i>	10	UPL	Mature fruits are eaten by a variety of wildlife including mammals, game birds and many species of songbirds. Its low-growing habit provides good nesting and escape cover for birds and

			<i>small mammals.*</i>
<i>Trees</i>			
Weeping Willow <i>Salix sepulcralis</i>	3	FACW	Currently present onsite Provides food source for bees and other pollinators. Provides food sources and shelter/nesting sites for birds.
Sycamore <i>Platanus occidentalis</i>	4	FACW	<i>Recommended for planting on all types of strip-mined land and is useful in rehabilitation of various sites with saturated soils. It is often a natural early colonizer of disturbed sites such as old fields, spoil banks, streambanks degraded by channelization, and waterway disposal sites*.</i> Fast growing
Cottonwood <i>Populus deltoides</i>	7	FAC	Dominant site tree species Resistant to flood damage Fast growing
Black Oak <i>Quercus velutina</i>	3	None	Significant wildlife food source and shelter.
Norway Spruce <i>Picea Abies</i>	5	None	Hearty to wetness, drought and a variety of soil conditions. Provides wildlife shelter and food source. Fast growing.
* USDA NRCS Northeast Plant Materials Program - Plant Fact Sheets			

The disturbed area along the brook up to elevation 50 on the north side and elevation 46 on the south side, will be treated with *New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites* which contains a selection of native grasses and wildflowers designed to colonize moist, recently disturbed sites where quick growth of vegetation is desired to stabilize the area. It is a suitable for

ecologically sensitive restorations that require stabilization and long-term establishment of native vegetation.

Outside of the wetlands, three upland enhancement areas are proposed including the steeply sloping fill bank along Prospect Avenue, the flat, triangular area south of the brook, and the sloping hillside adjacent to the highway off-ramp. The northern portion of the flat area will be planted with Black Oak and Mapleleaf Viburnum. This portion and the remainder of the flat, triangular area will be seeded with *New England Wildflower Mix*, a native wildflower mix. The sloping hillside along the highway will be seeded with *New England/Conservation Wildlife Mix* this area will also be planted with 5 Norway Spruce. The steeply sloping fill embankment along Prospect Avenue will be raked and seeded with *New England/Conservation Wildlife Mix*.

Seed mix specifications are provided on Sheet C-2.2.

5.2.1 Schedule

Site restoration activity would be scheduled to start immediately after an Inland Wetland Permit is obtained from the Town of West Hartford. A two-week lead time is estimated to complete the remaining woody debris management tasks, complete the initial phase of invasive species removals, and prepare the Site for planting.

Since the spring planting season will be nearly expired, Fall planting of woody vegetation will likely occur. However, seed mixes will be applied as soon as the site has been prepared.

Watering, maintenance and monitoring activities will continue throughout the fall, winter and spring. Failed vegetation will be replaced as needed until 100% survival over a 3-year period after planting is achieved.

Upland areas will be mowed in October for the first three years. Subsequent years may include an early season mowing.

5.3 Invasive Species Control

The Property contains a variety of invasive species including, Bittersweet, Poison Ivy, and Multi-flora Rose as well as a Japanese Knotweed colony identified on the eastern portion of the north side of the brook. Prior to site wide raking, MBI will identify any invasive species on the Property and tag them for removal by hand/hand tools. MBI will oversee the removal of the Japanese Knotweed to ensure that all rhizomes associated with these plants are removed, as practicable. The removed Knotweed will be placed in to 6ml, black plastic bags, secured, and stored onsite for controlled composting.

For three years after project completion, in April and September, the site will be surveyed for invasive species by MBI and tagged. Again, MBI will oversee the removal of the Knotweed and will confirm the removal of all other tagged invasives.

Once the bagged plants have fully decomposed, as directed by an environmental professional, the compost will be applied to the ground just beyond the paved parking area.

No herbicide application is proposed.

5.4 Project Monitoring and Reporting

A detailed schedule of proposed activities will be provided to the Town of West Hartford within 1 week after permit approval. It will contain the approximate start and end dates of the woody debris removal activities, invasives removal, woody vegetation planting, and seed application. Email notifications will be provided confirming these dates within three days of commencement.

For the first growing season, the vegetation will be surveyed and inventoried monthly. A monthly report will be provided to the Town of West Hartford with the details of the findings and any remedial actions (plant replacement, debris removal, etc.). A final report will be issued in November 2020, summarizing the overall success of the restoration and providing recommendations, as needed, to bolster or modify the plan.

In April of 2021, monthly reporting will resume for three months. Two subsequent reports will be provided in September and November of 2021. Reports will include assessment of the presence of invasives species and invasives species removal actions as well as any actions taken to replace or augment planted vegetation. Each report will include the condition of each woody plant installed and the percent growth coverage of the applied seed mixes.

In April, June, August and October of 2022 and 2023 reports will be provided to the Town and will include all items as indicated above.

The goals of the monitoring and reporting program will be to ensure that all planted vegetation has acclimated and is vigorous, and that invasive species have been removed.

6. Conclusions

The tree, shrub and vine removal from along and nearby the onsite wetlands was extensive. Although it resulted in the removal of wildlife habitat (cover) and stream benefit (shade), it was conducted in accordance with proper logging protocols and did not result in any significant direct impacts to the watercourse as evidenced by the lack of machine ruts and erosion. The installation of silt fence along the brook (completed immediately after the clearing) will continue to protect the brook from future erosional events that may occur before the restoration plan can be implemented. The silt fence should be monitored periodically and repaired as needed.

The vegetation and debris removal have provided an opportunity to enhance the brooks' inherent functions and values. With proper restoration implementation and ongoing management, this reach of Kane Brook can improve downstream water quality, increase flood capacity, and enhance native fish and other wildlife habitat.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Martin Brogie', with a stylized flourish at the end.

Martin Brogie, LEP
Soil Scientist
President

7. References

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